

Screening for Depression in Primary Care

Kathryn M. Magruder, M.P.H., Ph.D.

Derik E. Yeager, M.B.S.

VA Medical Center

Medical University of South Carolina

Charleston SC

Overview

- Epidemiology of depression in primary care
- Which screening tool should be used?
- Implementing depression screening in primary care
- What developments are on the horizon?
- Conclusions

Epidemiology:

1. Population Prevalence

- NCS-R: DSM-IV dx (12 month prevalence)
 - 9.5% any mood disorder
 - 6.7% MDD
 - 19.5% mild
 - 50.1% moderate
 - 30.4% serious
 - 1.5% dysthymia
- European 6-country study (12 month prevalence)
 - MDD 3.9%
- European meta-analysis (27 studies) (12 month prevalence)
 - MDD 3.1-10.1%

Epidemiology:

2. Primary Care Prevalence

- Pre-DSM-III-R PC MDD prevalence:
4.8-8.6%
- WHO PPGHC (15 cities/14 countries)
MDD (ICD10): 10.4% (2.6-29.5%)
- Backenstrass et al. (2006)
 - 4.6% MDD
 - 6.2% minor depression
 - 9.1% nonspecific depression sx

Primary Care: The *de facto* MH System

- ECA MDD (12 months prior)
 - 45% any health service
 - 27.8% specialty mental health care
 - 25.3% *general medical sector*
- NCS-R MDD (12 months prior)
 - 51.6% any health service
 - 27.2% *general medical sector*
 - 12.8% classified as mild
- 50-80% of all depression management in PC

Recognition of Depression: The Primary Care Irony

- General medical settings: primary venue for treating depression (and other mental disorders)
- <50% with MDD are diagnosed in PC
 - Magruder et al. VA sample of 819: 52% correct dx of depression (MDD, NOS, dysthymia)
 - WHO PPGHS: 54.2% (range 19.3%-74.0%) with depression correctly recognized as having psychological

Which Screening Tool?

1. Standard Screeners

<i>Tool</i>	<i>Scope</i>	<i># Items</i>	<i>Mi n.</i>	<i>Se lf</i>
BDI	Sx severity today	7, 13, or 21	2-5	yes
CES-D	Sx frequency past wk	10 or 20	2-5	yes
GDS	Sx endorsement past wk	15 or 30	2-5	
ID	Sx recently	15	2-5	
SDS	Sx frequency	20	2-5	yes

Which Screening Tool?

2. *Short Screeners*

<i>Tool</i>	<i>Scope</i>	<i># Items</i>	<i>Mi n.</i>	<i>Se lf</i>
HADS	Sx severity past wk	14	≤2	
MOS-D	Sx frequency past wk	8	<2	yes
PHQ	Sx frequency past 2 wk	9	<2	yes

Which Screening Tool?

3. Ultra-Short/Ultra-Brief Screeners

<i>Tool</i>	<i>Scope</i>	<i># Items</i>	<i>Min.</i>	<i>Sel</i>
PRIME-MD (PHQ-2)	Sx past month	2	1-2	yes
SDDS-PC	Sx past month	5	1-2	

Two-stage Approaches

- Combine screening and diagnosis
 - Quick screen (“stem” questions)
 - Dx modules for screen+ patients
- SDDS-PC
- PRIME-MD

Screening for General Emotional Distress

<i>Tool</i>	<i>Scope</i>	# <i>Items</i>	<i>Mi n.</i>	<i>Se lf</i>
WHO-5	Degree of well-being	5		
GHQ	General psychiatric distress; sx frequency past week	12, 28, or 30	2-10	yes
HSCL	General distress; sx frequency past wk	13 or 25	2-5	

Screening for Multiple Disorders

- General screener - 1-2 items/disorder
- Anxiety & Depression Detector (ADD) (Means-Christensen et al., 2006): 5 questions
 - Panic d/o
 - PTSD
 - Social phobia
 - GAD
 - MDD

Severity Ratings

- Beyond case-finding
- Evaluate treatment response/effectiveness
- Helps with “watchful waiting” for at risk patients with subthreshold or minor depression
- Administer screeners repeatedly
 - Sx changes
- Examples
 - Zung SDS
 - PHQ-9

Implementing Screening in Primary Care

- Consider:
 - Screening instrument performance characteristics
 - Clinical context
 - Underlying non-psychiatric case-mix
 - Overall staffing patterns
 - Underling prevalence of depression
- With above parameters, can estimate resource use for various implementation strategies

1-Stage Screening Approach

5% Prevalence

80% Sensitivity, 80% Specificity

		Gold Standard		
		MDD +	MDD -	
PHQ-9 +	True Positive	False Positive	Screen Positive	
	10	760	770	
PHQ-9 -	False Negative	True Negative	Screen Negative	
	50	950	1000	
MDD Positive		MDD Negative	Total Sample	

PPV: $40/230 = 17.4\%$. For every 100 screen positives, only approximately 17 would be depressed

Excess diagnostic burden: $190/1000 = 19\%$. Diagnostic

1-Stage Screening Approach

10% Prevalence

80% Sensitivity, 80% Specificity

		Gold Standard		
		MDD +	MDD -	
PHQ-9 +	True Positive	False Positive	Screen Positive	
	20	720	740	
PHQ-9 -	False Negative	True Negative	Screen Negative	
	100	900	1000	
MDD Positive		MDD Negative	Total Sample	

PPV: $80/260 = 30.8\%$. For every 100 screen positives, only approximately 31 would be depressed

Excess diagnostic burden: $180/1000 = 18\%$. Diagnostic

1-Stage Screening Approach

20% Prevalence

80% Sensitivity, 80% Specificity

		Gold Standard		
		MDD +	MDD -	
PHQ-9 +	True Positive	False Positive	Screen Positive	
	40	640	680	
PHQ-9 -	False Negative	True Negative	Screen Negative	
	200	800	1000	
MDD Positive		MDD Negative	Total Sample	

PPV: $160/320 = 50\%$. For every 100 screen positives, only approximately 50 would be depressed

Excess diagnostic burden: $160/1000 = 16\%$. Diagnostic

Performance of a One-Stage Screening Approach

Sample size: 1000

Sensitivity: 80%

Specificity: 80%

Prevalence	# Cases	Diagnostic Performance		Excess Burden
		PPV	Negative Predictive Value	
5%	50	17.4	92.6	19.0
10%	100	30.8	89.1	18.0
20%	200	50.0	75.0	16.0

2-Stage Screening Approach

5% Prevalence

		Gold Standard			
		MDD +	MDD -	Total	
Stage I	95% Sensitivity, 60% Specificity				
	Screen +	True Positive	48	380	428
Screen -	False Negative	2	570	572	
Stage II	MDD Positive	50	950	1000	PPV: $38/114 = 33.3\%$. For every 100 screen positives, approximately 33 would be depressed
	MDD Negative	38	76	114	
Screen +	True Positive	10	304	314	Excess diagnostic burden: $76/1000 = 7.6\%$.
	False Negative	48	380	428	

2-Stage Screening Approach

10% Prevalence

Gold Standard

	MDD +	MDD -	Total
Stage I	95% Sensitivity, 60% Specificity		
Screen +	True Positive	False Positive	Screen Positive
	95	360	455
Screen -	False Negative	True Negative	Screen Negative
	5	540	545
	MDD Positive	MDD Negative	Total
	100	900	1000

PPV: $95/455 = 20.9\%$. For every 100 screen positives, approximately 21 would be depressed

	MDD +	MDD -	Total
Stage II	80% Sensitivity, 80% Specificity		
Screen +	True Positive	False Positive	Screen Positive
	76	72	148
Screen -	False Negative	True Negative	Screen Negative
	19	288	307
	MDD Positive	MDD Negative	Sample
	100	900	1000

PPV: $76/148 = 51.4\%$. For every 100 screen positives, approximately 51 would be depressed

Excess diagnostic burden: $72/1000 = 7.2\%$.

Diagnostic assessment

2-Stage Screening Approach

20% Prevalence

Gold Standard

	MDD +	MDD -	Total
Stage I	95% Sensitivity, 60% Specificity		
Screen +	190 True Positive	320 False Positive	510 Screen Positive
Screen -	10 False Negative	480 True Negative	490 Screen Negative
	200 MDD Positive	800 MDD Negative	1000 Total Sample
Stage II	80% Sensitivity, 80% Specificity		
Screen +	152 True Positive	64 False Positive	216 Screen Positive
Screen -	10 False Negative	304 True Negative	314 Screen Negative
	48 MDD Positive	380 MDD Negative	428

PPV: $190/510 = 37.3\%$.

For every 100 screen positives, approximately 37 would be depressed

PPV: $152/216 = 70.4\%$.

For every 100 screen positives, approximately 70 would be depressed

Excess diagnostic burden: $64/1000 = 6.4\%$.

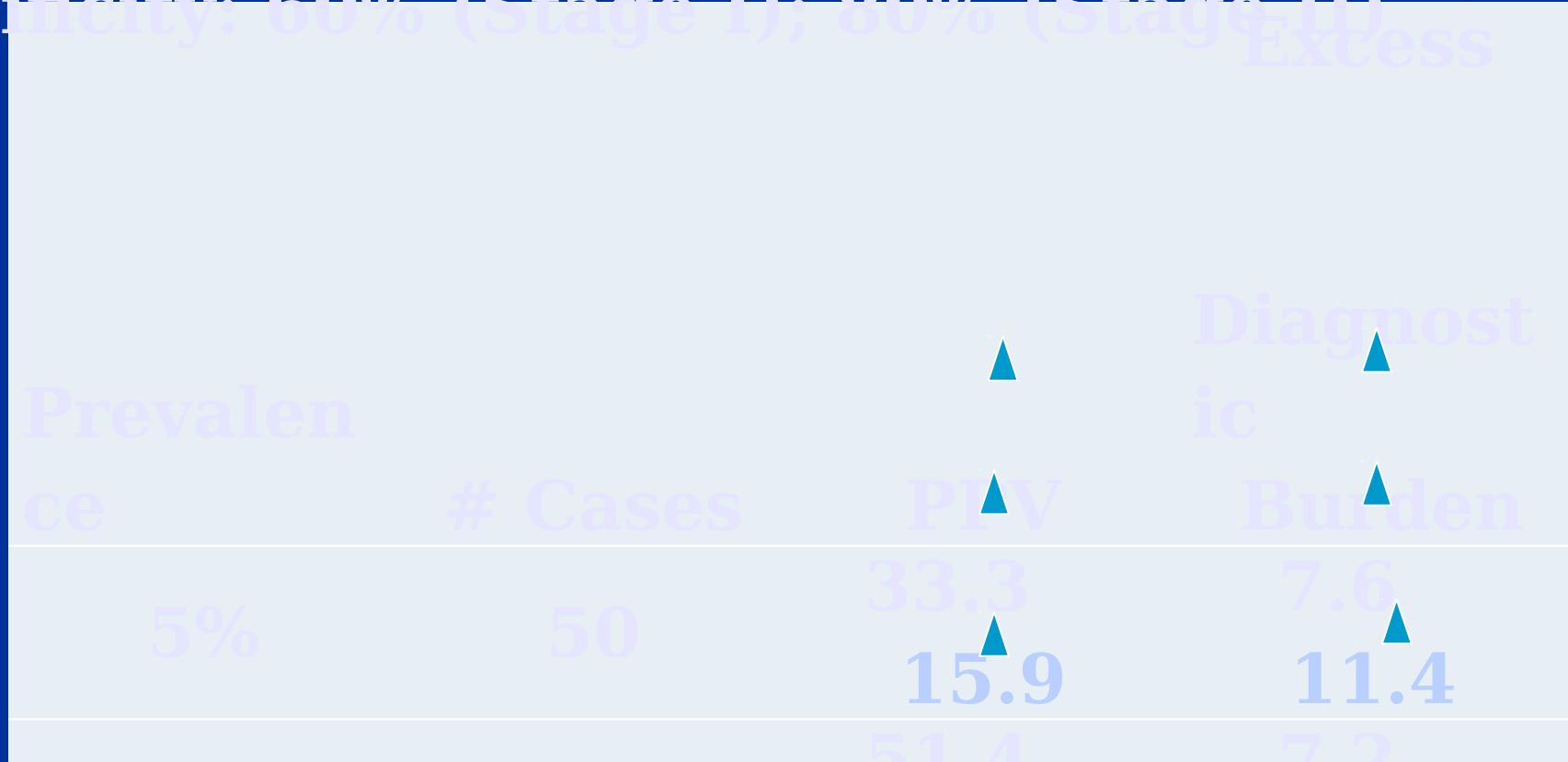
Diagnostic assessment

Performance of a Two-Stage Screening Approach

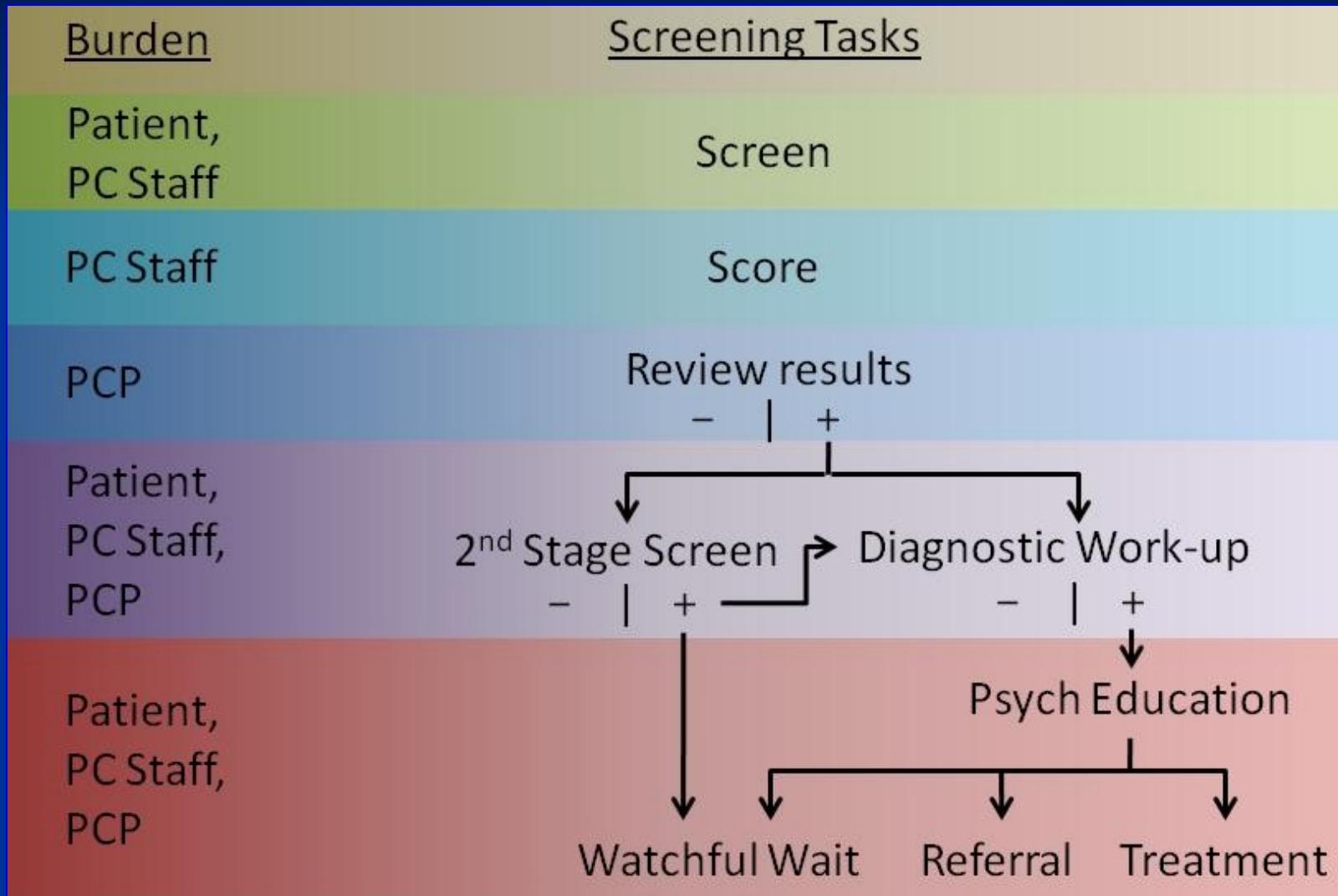
Sample size: 1000

Sensitivity: 95% (Stage I); 80% (Stage II)

Specificity: 60% (Stage I); 80% (Stage II)



Screening Burden by Task



Single Stage Screening Approach (Sensitivity: 80%, Specificity 80%)

Time Burden (min)	MDD Prevalence		
	5%	10%	20%
Screening (Patient)	2,000 (1000*2)	2,000 (1000*2)	2,000 (1000*2)
Scoring (Staff)	2,000 (1000*2)	2,000 (1000*2)	2,000 (1000*2)
Screening Yield	23.0% (230/1000)	26.0% (260/1000)	32.0% (320/1000)
Diagnostic Interview			
Patient	4,600 (230*20)	5,200 (260*20)	6,400 (320*20)
Provider	4,600 (230*20)	5,200 (260*20)	6,400 (320*20)
PPV	17.4% (40/230)	30.8% (80/260)	50% (160/320)

Two Stage Screening Approach:

Stage I (Sensitivity: 95%, Specificity 60%)
Stage II (Sensitivity: 80%, Specificity 80%)

Stage	Time Burden (min)	MDD Prevalence		
		5%	10%	20%
I	Screening (Patient)	1000 (1000*1)	1000 (1000*1)	1000 (1000*1)
	Scoring (Staff)	1000 (1000*1)	1000 (1000*1)	1000 (1000*1)
	Screening Yield	42.8% (428/1000)	45.5% (455/1000)	51.0% (510/1000)
II	Screening (Patient)	856 (428*2)	910 (455*2)	1,020 (510*2)
	Scoring (Staff)	856 (428*2)	910 (455*2)	1,020 (510*2)
	Screening Yield	26.6% (114/428)	32.5% (148/455)	42.4% (216 / 510)
Diagnostic Interview		2,280	2,960 (148*20)	4,320 (216*20)
Patient		(114*20) 2,280		

Comparison of Patient, Staff, and Provider Time (min) for One and Two Stage Screeners

MDD Prevalence

	5%		10%		20%	
	One Stage	Two Stage	One Stage	Two Stage	One Stage	Two Stage
Patient	6,600	4,136	7,200	4,870	8,400	6,340
Staff	2,000	1,856	2,000	1,910	2,000	2,020
Provider	4,600	2,280	5,200	2,960	6,400	4,320

What Developments Are on the Horizon?

- Increasing acceptance of screening (USPSTF)
- Reduce stigma
- Improve screening benefit/cost ratio
 - Improve tx outcomes
 - Reduce screening time
 - Reduce clinician and staff time by modifying screening modality
 - Patient self-administered computerized screens
 - Automated EMR screening reminders
 - 2-stage screening process
 - Dedicated nurses for screening & dx (also case-management)
 - Screening for multiple psychiatric disorders
 - Screening less often (e.g., 2-5 years instead of every year)

Conclusions

- Improvements in depression screening have paralleled improvements in depression treatment and reduced stigma
- PCPs have embraced responsibility for screening, recognizing, and treating depression
- For additional efficiencies, we will need
 - Advances in technology (e.g., computerized screening and scoring)
 - Improved tv outcomes